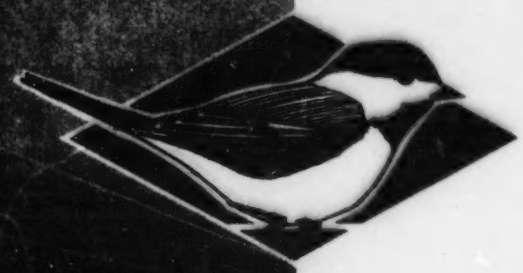

Fish & Wildlife Division

RESOURCE STATUS AND ASSESSMENT BRANCH

Alberta

Status of the White-winged Scoter (*Melanitta fusca deglandi*) in Alberta

Alberta Wildlife Status Report No. 45

Alberta Conservation Association

Funded by Alberta Anglers, Hunters, and Other Conservationists

Status of the White-winged Scoter (*Melanitta fusca deglandi*) in Alberta

Prepared for:
Alberta Sustainable Resource Development (SRD)
Alberta Conservation Association (ACA)

Prepared by:
Pat Kehoe

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For copies of this report, contact:
Information Centre - Publications
Alberta Environment/Alberta Sustainable Resource Development
Fish and Wildlife Division
Main Floor, Great West Life Building
9920 - 108 Street
Edmonton, Alberta, Canada T5K 2M4

Telephone: (780) 422-2079

OR

Information Service
Alberta Environment/Alberta Sustainable Resource Development
#100, 3115 - 12 Street NE
Calgary, Alberta, Canada T2E 7J2

Telephone: (780) 297-3362

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PREFACE

Every five years, the Fish and Wildlife Division of Alberta Sustainable Resource Development reviews the status of wildlife species in Alberta. These overviews, which have been conducted in 1991, 1996 and 2000, assign individual species "ranks" that reflect the perceived level of risk to populations that occur in the province. Such designations are determined from extensive consultations with professional and amateur biologists, and from a variety of readily available sources of population data. A primary objective of these reviews is to identify species that may be considered for more detailed status determinations.

The Alberta Wildlife Status Report Series is an extension of the general statusing exercises (1996 *Status of Alberta Wildlife*, *The General Status of Alberta Wild Species* 2000), and provides comprehensive current summaries of the biological status of selected wildlife species in Alberta. Priority is given to species that are potentially at risk in the province ("At Risk," "May Be At Risk"), that are of uncertain status ("Undetermined"), or those considered to be at risk at a national level by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Reports in this series are published and distributed by the Alberta Conservation Association and the Fish and Wildlife Division of Alberta Sustainable Resource Development. They are intended to provide detailed and up-to-date information which will be useful to resource professionals for managing populations of species and their habitats in the province. The reports are also designed to provide current information which will assist the Alberta Endangered Species Conservation Committee to identify species that may be formally designated as "Endangered" or "Threatened" under Alberta's *Wildlife Act*. To achieve these goals, the reports have been authored and/or reviewed by individuals with unique local expertise in the biology and management of each species.

EXECUTIVE SUMMARY

The white-winged scoter (*Melanitta fusca deglandi*) once bred throughout the prairies and parklands of North America. The southern extent of its former range has become retracted and populations throughout much of the present range are declining. Population data are limited within Alberta. Therefore, data collected by the United States Fish and Wildlife Service and Canadian Wildlife Service during annual breeding waterfowl surveys provide the best information on status and trends. These surveys show that the white-winged scoter no longer breeds commonly in the southern third of Alberta and is declining elsewhere in the province. Reasons for this decline and for the range reduction are unclear. Breeding populations of the white-winged scoter are now extirpated from North Dakota and southern Manitoba. Local populations in parkland Saskatchewan and southern Alberta are presently showing patterns of decline similar to those shown by populations in North Dakota early in this century. The available data suggest that the decline in scoter populations has been long-term and widespread throughout this species' North American range.

According to *The General Status of Alberta Wild Species 2000* the white-winged scoter is considered "Sensitive" in the province (Alberta Sustainable Resource Development 2001). The white-winged scoter is a legal game bird under the Federal Migratory Bird Regulations and has no special status in Canada or the United States. A Sea Duck Joint Venture was recently formed under the North American Waterfowl Management Plan to address the conservation needs of sea ducks. The white-winged scoter has been identified as a research and conservation priority by this joint venture.

Better population information and an increased understanding of the factors influencing population dynamics are needed if we are to effectively conserve this species in Alberta.

ACKNOWLEDGEMENTS

Dave Duncan (Canadian Wildlife Service), Ken Lungle (Alberta Sustainable Resource Development), Tom Sadler (North American Waterfowl Management Plan), Sherry Feser (Alberta Conservation Association), Robin Gutsell (Alberta Sustainable Resource Development) and Sue Peters (Alberta Conservation Association) provided helpful comments and offered valuable input after reviewing an earlier draft of this report. Jane Horb developed the graphics. Dave Duncan and D. Watson (Ducks Unlimited) provided additional data and observations on white-winged scoters in Alberta. R. Alisauskas provided assistance on surveys in Saskatchewan. I would also thank D.G. Dennis (Canadian Wildlife Service), G. Haas (U.S. Fish and Wildlife Service), B. Ilnicki (Ducks Unlimited Canada), D. Kay (Ducks Unlimited Canada), R. Trost (U.S. Fish and Wildlife Service), and P. Ward (Former Director of Delta Waterfowl Research Station) who provided additional observations of and information on scoters, which proved relevant to this report. The Canadian Wildlife Service and United States Fish and Wildlife Service are acknowledged for the survey efforts directed to North American waterfowl. Without these data we would have virtually no information on white-winged scoter populations.

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INTRODUCTION

The white-winged scoter (*Melanitta fusca deglandi*) is a large-bodied sea duck (Tribe: Mergini) with a widespread, continuous distribution in North America. Declines in white-winged scoter populations were noticed early in this century (Kortright 1942, Stewart 1975). Sea ducks in general are among our most poorly understood group of waterfowl and concern for their populations is increasing (Kehoe 1994). A Sea Duck Joint Venture was recently formed under the North American Waterfowl Management Plan to address the conservation needs of sea ducks. The white-winged scoter has been identified as a research and conservation priority by this joint venture.

Within Alberta, population data for the white-winged scoter are limited. Data collected by the United States Fish and Wildlife Service and Canadian Wildlife Service during annual breeding waterfowl surveys provide the best information on status and trends. These surveys show that the white-winged scoter no longer breeds commonly in the southern third of Alberta and is in decline elsewhere in the province.

This report is intended to compile and summarize relevant, up-to-date information on the white-winged scoter in Alberta to provide a basis for evaluation of the status of this species in the province.

HABITAT

The white-winged scoter breeds on large, permanent wetlands and lakes from the southern prairies to the taiga plains of North America, and commonly nests on shrub-covered islands (Brown and Frederickson 1997). Scoters from prairie Canada use large, permanent lakes for migratory staging and spend their winters along both the Atlantic and Pacific Coasts.

Within Alberta, the quantity of breeding habitat available for scoters has been generally stable. White-winged scoters have bred throughout the Grassland, Parkland, Foothills, Boreal Forest and Canadian Shield Natural Regions, where suitable habitat exists. Although wetland loss is considered a major conservation issue within Alberta, the large permanent wetlands and lakes preferred by scoters have not been subject to the same rate of loss as seasonal and semi-permanent wetlands. However, factors such as urban and recreational development of lakes are generally thought to negatively affect the quality of breeding habitat and breeding success of this species.

CONSERVATION BIOLOGY

Globally, there are three subspecies of *Melanitta fusca*; the velvet scoter *(M. f. fusca)* of Europe and eastern Asia, the white-winged scoter *(M. f. deglandi)* of North America and *M. f. stejnegeri* of western Asia (Brown and Fredrickson 1997). There is no evidence for subdivision of the North American population at this time. Given the strong female natal philopatry (Brown and Brown 1981), it is plausible that subpopulations may exist within the broad geographic range occupied by this species, although none have been delineated to date. Philopatric behavior occurs when females of a species return year after year to the same breeding area in which they were raised. It is plausible that this behavior could reduce genetic exchange between populations breeding at specific sites or within geographic regions. However, since males are not philopatric and may breed in different locations each year, this reduces the possibility of genetically distinct populations developing.

Within North America, very little is known about the white-winged scoter relative to most waterfowl. The majority of information on this species comes from very localized populations. The populations at Redberry Lake in Saskatchewan, Jessie Lake in Alberta, and the Delta Marsh in Manitoba have received the most attention (Kehoe 1994). The Jessie Lake and Delta Marsh populations no longer exist (D. Duncan, pers. comm. and P. Kehoe, pers. obs.).

The white-winged scoter is a relatively long-lived duck. Several females banded as adults at Redberry Lake, Saskatchewan survived 10 years after banding and one individual lived at least 18 years after banding (Kehoe et al. 1989). The mean life span of the white-winged scoter is 3.88 years (Krementz et al. 1997). Scoters breed for the first time at two or three years of age and generally have low annual productivity (Brown 1981). Adult white-winged scoters have relatively high survival rates compared to other North American waterfowl (Krementz et al. 1997).

The majority of scoters are thought to breed at low densities across the boreal forest and taiga plain of North America; however, there is currently no information available on breeding biology and productivity from these habitats. Most information on the breeding biology of the white-winged scoter comes from large, permanent lakes or wetlands at the southern extent of their breeding range, with relatively high densities of breeding scoters. In these habitats, the scoter shows a preference to nest on shrub-covered islands, and is characterized as semi-colonial. Within these sites, most of the information has come from island nesting birds, even though the majority of birds at these locations may, in fact, nest on the mainland (P. Kehoe, pers. obs.).

The white-winged scoter is a late-nesting duck that arrives on breeding lakes in mid-May and initiates egg-laying in early June (Brown and Frederickson 1997). The breeding chronology of scoters is approximately three weeks later than species such as mallards (*Anas platyrhynchos*) and pintails (*Anas acuta*), which initiate egg-laying in early May (Bellrose 1976). Soon after incubation begins, the male scoter leaves the breeding lakes for moulting areas, which are currently undocumented.

The white-winged scoter nest is a shallow, down-lined depression established in thick vegetation, which usually contains 8-10 eggs. Both avian and mammalian predators will take eggs, but white-winged scoter nest success is still high relative to other duck species (Brown and Frederickson 1997). The incubation period lasts 25-27 days and the ducklings take to water within 24 hours of hatching (Brown and Frederickson 1997). The peak hatching period is during the third week of July (Brown and Frederickson 1997).

Low duckling survival is the critical factor limiting annual productivity (Brown and Frederickson 1997). California gulls (*Larus californicus*) are a major predator of ducklings at Redberry Lake (Kehoe 1986) and likely contribute significantly to mortality at other sites.

Female white-winged scoters are prone to abandoning their ducklings to crèches, where one hen may end up tending 60 or more ducklings from many different broods (Kehoe 1986). This behavior increases the survival probability for individual ducklings, as the chances of an individual being taken by a predator are reduced in the group (Kehoe 1986). The adult females that abandon their young, and those that lose nests to predation, leave the nesting lake to moult in unknown locations.

Ducklings fledge within 8-10 weeks, usually by mid- to late September, and migrate soon afterward (Brown and Frederickson 1997).

The white-winged scoter primarily eats invertebrates throughout its annual cycle. The freshwater shrimp, *Hyallela azteca*, is a preferred prey at Redberry Lake, Saskatchewan, and likely at most breeding sites (Brown 1981). Bivalve molluscs, such as blue mussel (*Mytilus edulis*), are preferred on coastal wintering areas (Brown and Frederickson 1997).

DISTRIBUTION

1. Alberta. - The white-winged scoter is an uncommon but widespread breeding species in the province (Semenchuk 1992). Historically,

Alberta comprised approximately one-sixth of the North American breeding range of the white-winged scoter (Figure 1). Historic and recent site-specific records are poor; however, it is likely that the extent of occurrence of the white-winged scoter was province-wide (Semenchuk 1992). Breeding Bird Atlas surveys between 1987 and 1991 recorded the white-winged scoter in 3% of surveyed squares in the Grasslands and Foothills Natural Regions, 8% in the Parkland and Boreal Forest Natural Regions and 13% in the Canadian Shield (Semenchuk 1992). No breeding records occurred in the Rocky Mountain Natural Region (Semenchuk 1992).

Within Alberta the breeding distribution of the white-winged scoter is fragmented and limited by the availability of suitable lakes and wetlands. Semenchuk (1992) reports 18 confirmed and 54 probable breeding sites in the province. Suitable habitats are more common in the northern two-thirds of the province; however, not all sites have been specifically surveyed for scoters. The white-winged scoter has been recorded breeding on several large lakes and wetlands in southern Alberta at the McIntyre Ranch (D. Watson, pers. comm.), and at the Verger wetland complex near Duchess, which is managed by Ducks Unlimited (P. Kehoe, pers. obs.). These populations are small, with likely fewer than 20 pairs at each location.

It is unlikely that Alberta ever supported a large proportion of the continental population of the white-winged scoter. This is based on the small proportion of its continental range within the province and because of the relatively low density of suitable habitat (lakes) in Alberta, as compared to adjacent jurisdictions.

2. Other Areas. - The primary breeding range of the white-winged scoter occurs within the western boreal forest from Alaska through western Canada (Figure 1). This range extends east of Hudson's Bay and south into the prairie and parkland; however, population densities are lower in the southern and eastern biomes. The white-winged scoter once bred on large, permanent wetlands and lakes throughout the prairies and parklands as far south as North Dakota. The southern extent of its former range has become retracted such that it no longer breeds in North Dakota or southern Manitoba (Figure 1).

The migratory patterns of the white-winged scoter are poorly understood. White-winged scoters banded at Redberry Lake, Saskatchewan have been recovered, in roughly equal numbers, from both the Atlantic and Pacific coasts (Houston and Brown 1983). It is generally thought that scoters from the western breeding range winter on the Pacific coast and birds from the eastern portion of the range migrate to the Atlantic coast. Specific migratory patterns for white-winged scoters breeding in Alberta are not known. However, both Atlantic and Pacific migrations from Alberta are probable. There are limited data available and further investigation is needed.

White-winged scoters winter along both coasts and in the Great Lakes (Figure 2) where they congregate in large flocks. They arrive on the wintering grounds as early as late August and stay until late April (P. Kehoe, pers. obs.). On the Pacific Coast, white-winged scoters winter in localized areas from Alaska to Baja California, with highest densities between Alaska and Northern California (R. Trost, pers. comm.) (Figure 2). On the Atlantic coast, they winter in localized areas from Newfoundland to Florida, with highest densities found from Nova Scotia to New York and in Chesapeake Bay (G. Haas, pers. comm.) (Figure 2).

White-winged scoters migrate to the Atlantic coast using the St. Lawrence River and the Great Lakes in both spring and fall, but the proportion of the population using these areas is unknown. The number of scoters using the Great Lakes and their duration of stay has increased in response to the abundant food source created by the invasion of zebra mussels (*Dreissena*

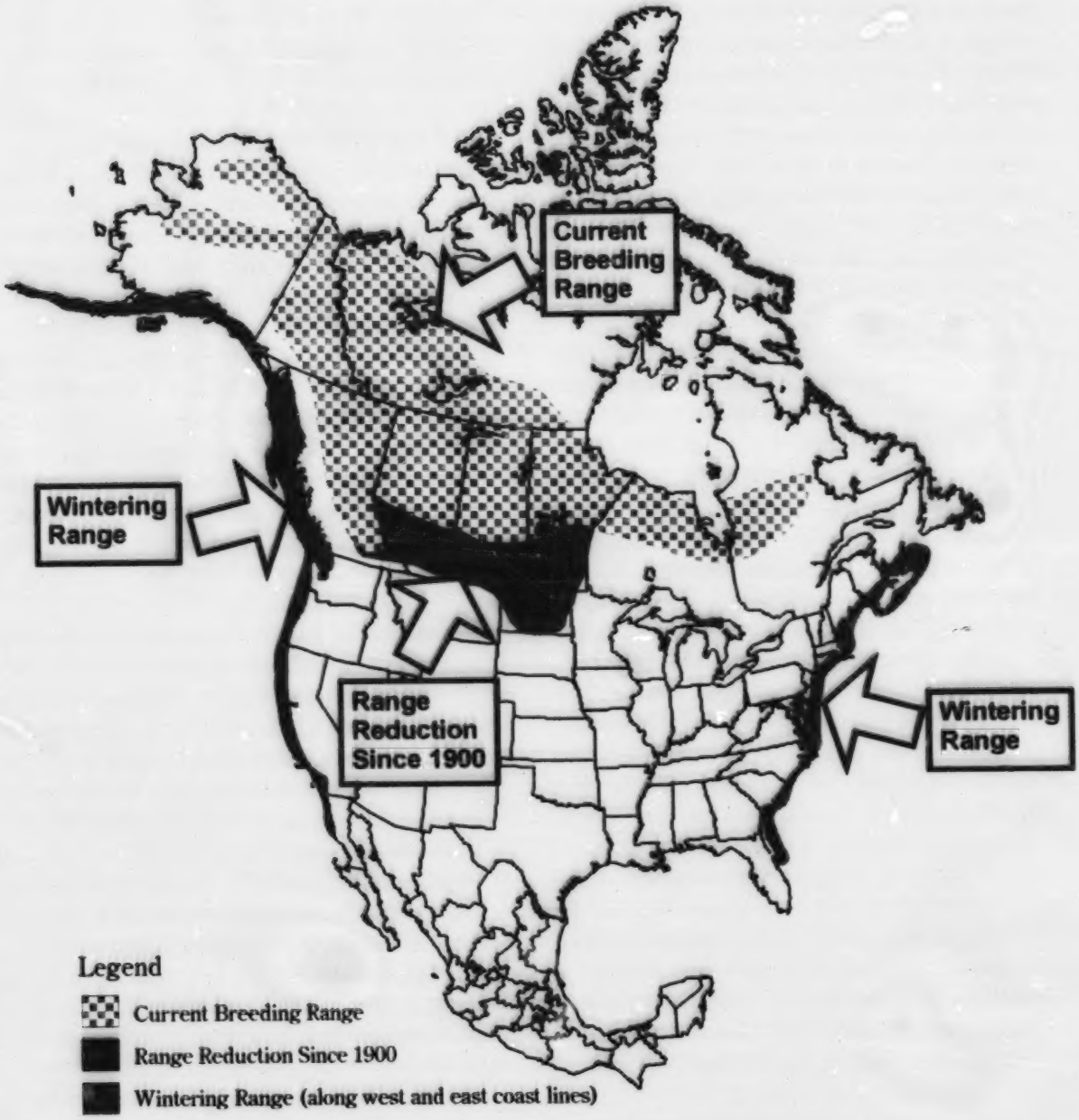

Figure 1. Breeding and wintering ranges of the white-winged scoter in North America.

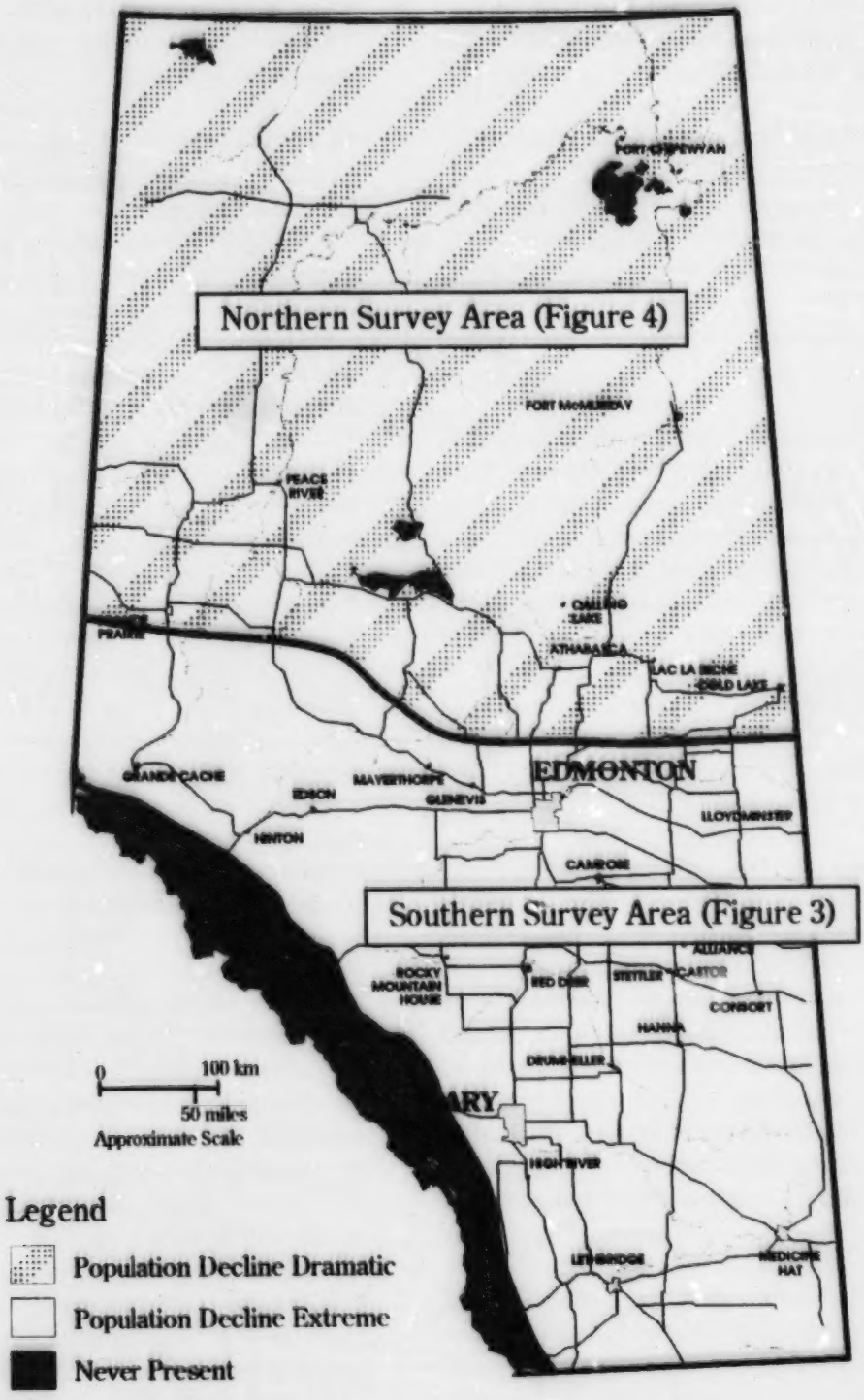

Figure 2. Breeding range of the white-winged scoter in Alberta.

polymorpha) (D. Dennis, pers. comm.). Staging areas used by western populations have not been documented, but the birds are thought to fly west to the Pacific and follow the coast south.

POPULATION SIZE AND TRENDS

The white-winged scoter once bred throughout the prairies and parklands of North America. The southern extent of their former range has become retracted (Figure 1) and populations throughout most of the present range are in decline (Figures 3-5).

White-winged scoter declines were noticed early in this century (Kortright 1942, Stewart 1975), but little attention was given to this problem. By the 1950s, this species disappeared as a breeding bird in North Dakota, where it had once been considered widespread (Stewart 1975). The white-winged scoter formerly was the third most common breeding duck species at the Delta Marsh in Manitoba, comprising up to 20% of the breeding population (Hochbaum 1944, Rawls 1949). Scoters have not bred at the Delta Marsh since the 1960s (P. Ward, pers. comm.).

Population data are limited within Alberta. Many of the initial observations of the white-winged scoter at known locations, such as those at McIntyre Ranch and Verger, were either casual or made during surveys directed at other ducks. Historical inventories do not exist and not all lakes have been inventoried, therefore, assessing the status of individual breeding populations is problematic. In 1998, D. Duncan (pers. comm.) revisited the population of approximately 57 pairs at Jessie Lake (Brown 1981), and no scoters were observed. However, Jessie Lake was known to be dry during the early 1990s (B. Ilnicki, pers. comm.). Factors influencing the Jesse Lake population are not likely reflective of those affecting the provincial population. Vermeer (1969) reported on aspects of the breeding biology of white-winged scoters at Miquelon Lakes, Alberta, but did not present a population estimate for this location. Vermeer (1968, 1970) also reported nest densities of white-winged scoters at Lake Newell and Lower Therien Lake, Alberta, without presenting population estimates.

In 1998 and 1999, Kehoe and Alisauskas (unpubl. data) conducted breeding pair surveys on three Saskatchewan lakes, where white-winged scoters were recorded in the past; at all three lakes, declines or disappearance were documented. Population trends at these Saskatchewan sites and at Jessie Lake, Alberta, are similar to patterns of decline and disappearance observed in North Dakota and southern Manitoba earlier this century (Kortright 1942, Stewart 1975). Given this pattern, it is probable that a northwestward range contraction is continuing.

Data collected by the United States Fish and Wildlife Service and Canadian Wildlife Service (CWS) during the May Cooperative Waterfowl Breeding Population Survey (hereinafter: breeding waterfowl survey) provide insight into the status and trends of scoter populations in Alberta. However, inferences based on these data need to be viewed with caution as the breeding waterfowl survey is designed primarily for species such as mallards. The survey is timed to coincide with peak breeding periods for these species, and is generally conducted too early to accurately record white-winged scoter trends. This survey has not been designed specifically for scoters; therefore, population estimates and absolute magnitude of change cannot be reliably estimated. Annual scoter counts in the breeding waterfowl survey are highly variable because of a low incidence of encounter and the extrapolation factors applied. The breeding waterfowl survey data should not be analyzed quantitatively for scoter populations because of these limitations. In spite of this, the breeding waterfowl survey provides the only data that have been consistently collected within the breeding range, and thus should provide a reasonable trend index for this species.

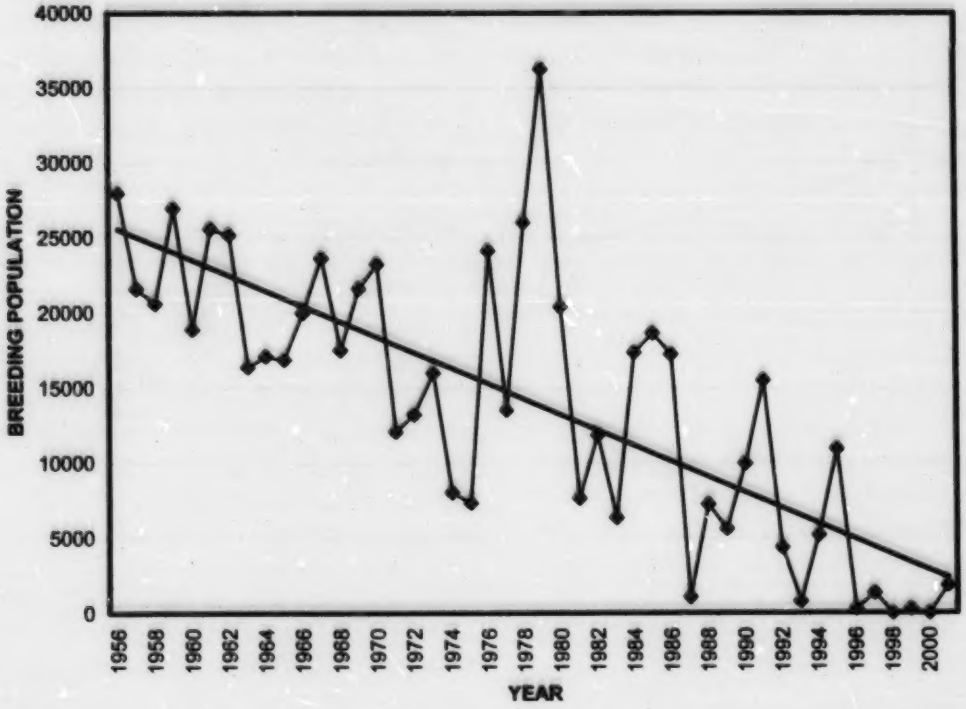

Figure 3. Trends in breeding populations of the white-winged scoter in southern Alberta.

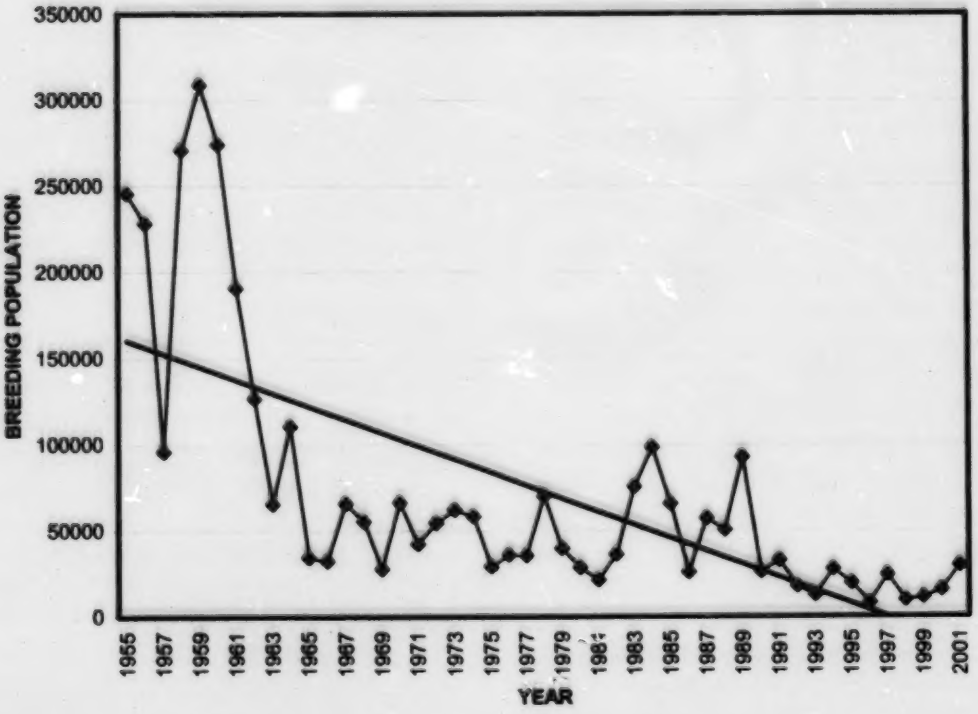

Figure 4. Trends in breeding populations of scoters (all species combined) in northern Alberta.

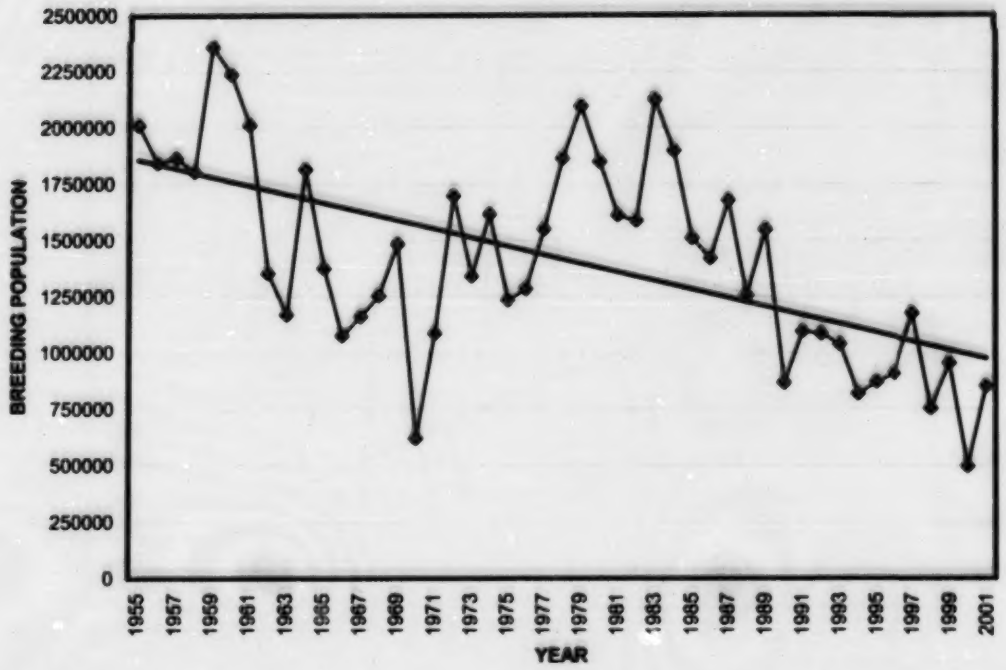

Figure 5. Trends in breeding populations of scoters (all species combined) in North America.

Data for all scoter species are combined under a generic "scoter" count in the breeding waterfowl survey. Therefore, it is not possible to examine trends specific to each species over most of the survey area. Nonetheless, because of the differences in scoter breeding ranges, the data from the breeding waterfowl survey for southern survey strata (parkland and prairie transects) should be specific to the white-winged scoter. Data for these strata suggest that the white-winged scoter has declined dramatically in southern Alberta (Figure 3). This decline is apparently close to 100%; only a few scattered breeding populations are likely to persist. Note that there is a high degree of annual variation in counts in Figure 3. This variation is due in part to the early timing of the survey resulting in a high proportion of migrants being counted in some years, and missed in others.

Within Alberta, the highest breeding densities of the white-winged scoter occur in the western boreal forest, where it overlaps with the surf scoter (*Melanitta perspicillata*) breeding range. This region of overlap includes the northern third of Alberta. Semenchuk (1992) lists the surf scoter as a rare breeder in this region and therefore, counts are likely dominated by the white-winged scoter, but the proportion of each species represented in the count is unknown. Survey results from strata in this region suggest that the decline may be as dramatic as 90%, compared to the long-term average in the 1950s (Figure 4). Survey areas for Alberta are summarized in Figure 2.

Although the exact number of scoters breeding in Alberta cannot be determined and the accuracy of estimates from the waterfowl survey data are unknown, the population has likely declined. The scoter decline has occurred by an order of magnitude, perhaps from over 100 000 birds in the 1950s to the low tens of thousands today (Figures 3 and 4).

Few survey strata show an increase, and the decline has been long-term across the North American range (Figure 5). Given that female

white-winged scoters are strongly philopatric to natal areas (Brown 1981), it is unlikely that declines in certain areas are reflective of a redistribution of the birds within the breeding range.

Extrapolation factors applied to the survey data to estimate populations for other duck species do not apply to white-winged scoters because of their clumped distribution on large water bodies. Therefore, it is not possible to estimate the number of scoters that may have bred in the southern part of the range. Nonetheless, consistency in the patterns of decline over the past 100 years and the disappearance of this species from key sites in both the prairie and parkland of Saskatchewan and Manitoba increases the concern for the future of white-winged scoters in Alberta's prairie and parkland. Concern is also warranted in the northern portion of Alberta where trends for the combined counts of the three scoters also indicate declines.

Continental population trend inferences can also be made from mid-winter waterfowl inventories conducted every January along the Atlantic and Pacific coasts. However, these surveys also combined the scoter species under one count. Scoter counts are highly variable and this survey is not well designed for sea ducks, which tend to have a clumped distribution and occur in large flocks in specific habitats. Mid-winter inventory data do not indicate a trend on the Pacific Coast and weakly indicate a decline on the Atlantic coast (Kehoe 1994, Trost and Drut 2001). Estimates of the size of wintering populations are not available.

LIMITING FACTORS

Factors that are most limiting to white-winged scoter populations have not been identified. Most explanations postulated have been proposed to explain the decline or disappearance of local populations. For example, early losses in North Dakota were hypothetically attributed to intensive egg collecting by hobby ornithologists, excessive hunting pressure and changes in water quality (Stewart 1975). There are several other potential limiting factors that may affect scoters at different stages of their annual cycle.

1. Breeding. - Availability of suitable breeding sites is not thought to be a limiting factor for scoters over most of the breeding range. Many of the lakes in Alberta and elsewhere in the southern portion of the breeding range, which once supported white-winged scoters, no longer have breeding populations yet there has been no apparent change to the habitat. Degradation of breeding habitat through increased recreational use and increased disturbance to nests and broods may be responsible for the loss of scoters from some former breeding sites.

An increase in populations of California gulls on lakes used by breeding scoters may also be reducing duckling survival. California gulls are known predators of white-winged scoter ducklings (Brown 1981). There may also be synergistic effects of increased recreational activity increasing disturbance of broods and thereby facilitating predation by gulls or otherwise reducing brood survival.

Development of irrigation reservoirs at sites such as Lake Newell and other agricultural activities may have degraded former breeding habitats in southern Alberta.

Female white-winged scoters show a strong degree of philopatry to natal areas (Brown and Brown 1981), a behavioral trait that generally limits dispersal. Therefore, once a local breeding population is lost or depressed through several years of low breeding success or high adult mortality, it is unlikely to recovery rapidly. There are no data available on population recovery rates.

The impacts of increased timber harvest on wetland quality and waterfowl populations in the boreal forest are also poorly understood. The lack of information on scoters breeding at low

densities across much of the range and those nesting on mainland sites precludes any speculation about the possible impact of upland land-use change on scoter populations.

2. Wintering. - Scoter populations may be limited by factors on the wintering grounds. Degradation of coastal wintering habitats through urban and industrial development may be contributing to the decline of this species (Kehoe 1994). It has been suggested that bioaccumulation of toxins throughout the winter may be negatively affecting reproductive success (Di Guilo and Scanlon 1984), but this has not been tested. Palmer (1976) suggested that oil pollution on wintering areas likely kills more scoters than are harvested annually by hunters.

3. Harvest. - The disappearance of the breeding population at the Delta Marsh, Manitoba, may be related to local hunting pressure (Kehoe 1994). Hunting pressure at the Delta Marsh was generally high and the incidental harvest rate of the scoters may have exceeded their reproductive capacity. However, it is unlikely that harvest can account for the widespread patterns of disappearance and declines that continue to occur.

The white-winged scoter is harvested at relatively low levels throughout its fall migration and winter range (Bonser and Dickson 2001). Harvest surveys are poorly designed for sea ducks (Kehoe 1994), and as a result, annual harvest estimates are highly variable, likely underestimate the harvest in coastal jurisdictions and are unreliable in interior states and provinces. Over 80% of the harvest of white-winged scoters occurs in the Atlantic Flyway. Harvest rates, that is, the proportion of the population of scoters that are harvested annually, are not known. This information is critical to determine if current levels of harvest are sustainable. Based on available data, white-winged scoters comprise less than 0.2% of the continental waterfowl harvest, even in years of relatively high harvest (Trost and Drut 2001). Based on a CWS hunter survey, there have been no white-winged scoters harvested in Alberta since 1988 (Bonser and Dickson 2001). Before 1998, harvest estimates within Alberta were low, generally fewer than an estimated 500 birds per year (Bonser and Dickson 2001). These estimates must be viewed with caution and should only be interpreted as indicating a low, incidental harvest within Alberta.

Restrictive regulations have been employed and have successfully reduced scoter harvests in the Atlantic Flyway since the early 1990s (G. Hass, pers. comm.). Before these restrictions, scoter harvest estimates averaged around 16 000, with highs exceeding 30 000 (Bonser and Dickson 2001). Since 1994 the annual harvest estimate has averaged around 3800 (Bonser and Dickson 2001). Levels of subsistence harvest are unknown; however, white-winged scoters are an important bird among the First Nations of the western boreal forest (D. Kay, pers. comm.). Current and historic levels of subsistence harvest are unknown on the breeding ground. It is unlikely that sport harvest has been a causal factor in the decline, either continentally or within Alberta. Based on banding analyses, adult and subadult survival is relatively high (Kehoe et al. 1989, Krementz et al. 1997). It appears that adult survival on the wintering ground is not affecting white-winged scoter populations breeding on the prairies. It is more likely that factors that result in reduced recruitment through decreased breeding success are contributing to the decline.

STATUS DESIGNATIONS

1. Alberta. - According to *The General Status of Alberta Wild Species 2000*, the white-winged scoter is designated as "Sensitive" in Alberta (Alberta Sustainable Resource Development 2001). The Alberta Natural Heritage Information Centre (ANHIC) does not include the white-winged scoter on its tracking list (ANHIC 2001); however, according to NatureServe (2001) the white-winged scoter is

ranked S4 or "apparently secure" in Alberta.

2. Other Areas. - The white-winged scoter is a legal game bird under the Federal Migratory Bird Regulations, and is considered a game species throughout its range. It has been recognized as a priority species under the recently established Sea Duck Joint Venture (SDJV) of the North American Waterfowl Management Plan. The SDJV established priority for this species based on the review of available population data.

The global heritage rank of the white-winged scoter is G5 or "secure" (NatureServe 2001). It has no special status federally in Canada or in the United States. According to *Wild Species 2000: The General Status of Species in Canada*, the white-winged scoter is considered "Secure" in British Columbia, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, "Sensitive" in Saskatchewan, Yukon and Northwest Territories, "Undetermined" in Nunavut, and "May Be At Risk" in Ontario (CESCC 2001).

RECENT MANAGEMENT IN ALBERTA

The white-winged scoter has received little attention in Alberta. Interest is increasing with the advent of the SDJV and the recent analyses that suggest this species is in decline. There are no special harvest limits for scoters in Alberta. Hunters can harvest up to 8 per day and possess 16, as part of the general bag limit for ducks.

SYNTHESIS

The breeding waterfowl survey indicates declines in scoter populations throughout Alberta. These surveys suggest declines since the 1950s of close to 100% in southern Alberta and as much as 90% in the northern part of the province. Within southern Alberta, the white-winged scoter was formerly much more common and widespread than it is now, and there are likely only small, scattered populations remaining in the Grassland and Parkland Natural Regions of Alberta. Population declines of the white-winged scoter in southern Alberta are similar to those declines that occurred in North Dakota and Manitoba in the early 1900s, where it no longer breeds. The breeding waterfowl survey indicates declining populations in northern Alberta as well. The available data suggest that the decline in scoter populations has been long-term and widespread throughout their North American range. If action is not taken to better understand the population ecology of this species such that appropriate management actions may be implemented, the white-winged scoter may soon disappear as a breeding bird in the Grassland and Parkland Natural Regions of Alberta, and continue to decline in the north.

Current breeding sites within Alberta should be identified through directed surveys and ongoing population monitoring programs should be implemented. There is an immediate need to evaluate all available survey data to determine the reliability of the decline. Accurate population estimates are needed at the continental and provincial levels. Research programs should be implemented to gain a better understanding of the population dynamics of this species and the interaction between environmental factors and various demographic aspects. Knowledge of the nesting habitat requirements of mainland nesting scoters is also required. Banding and telemetry programs should be implemented to identify migratory routes and relative abundance across all seasonal ranges and moulting and staging habitats. Although the current level of harvest seems low relative to other species, we need to better quantify sport and subsistence harvest. However, it is unlikely that harvest restrictions within Alberta would have any impact on white-winged scoter populations.

A better understanding of the factors that are driving population declines is required so management plans can be developed.

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APPENDIX 1. Definitions of selected legal and protective designations.

A. The General Status of Alberta Wild Species 2000 (after Alberta Sustainable Resource Development 2001)

2000 Rank	1996 Rank	Definitions
At Risk	Red	Any species known to be "At Risk" after formal detailed status assessment and designation as "Endangered" or "Threatened" in Alberta.
May Be At Risk	Blue	Any species that may be at risk of extinction or extirpation, and is therefore a candidate for detailed risk assessment.
Sensitive	Yellow	Any species that is not at risk of extinction or extirpation but may require special attention or protection to prevent it from becoming at risk.
Secure	Green	Any species that is not "At Risk", "May Be At Risk", or "Sensitive".
Undetermined	Status Undetermined	Any species for which insufficient information, knowledge or data is available to reliably evaluate its general status.
Not Assessed	n/a	Any species known or believed to be present but which has not yet been evaluated.
Exotic/Alien	n/a	Any species that has been introduced as a result of human activities.
Extirpated/Extinct	n/a	Any species no longer thought to be present in Alberta ("Extirpated") or no longer believed to be present anywhere in the world ("Extinct").
Accidental/Vagrant	n/a	Any species occurring infrequently and unpredictably in Alberta, i.e., outside their usual range.

B. Alberta Wildlife Act/Regulation

Species designated as "Endangered" under Alberta's *Wildlife Act* include those listed as "Endangered" or "Threatened" in the Wildlife Regulation.

Endangered	A species facing imminent extirpation or extinction.
Threatened	A species that is likely to become endangered if limiting factors are not reversed.

C. Committee on the Status of Endangered Wildlife in Canada (after COSEWIC 2002)

Extinct	A species that no longer exists.
Extirpated	A species that no longer exists in the wild in Canada, but occurs elsewhere.
Endangered	A species facing imminent extirpation or extinction.
Threatened	A species that is likely to become endangered if limiting factors are not reversed.
Special Concern	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk	A species that has been evaluated and found to be not at risk.
Data Deficient	A species for which there is insufficient scientific information to support status designation.

D. Heritage Status Ranks: Global (G), National (N), Sub-National (S) (after Alberta Natural Heritage Information Centre 2000)

G1/N1/S1	5 or fewer occurrences or only a few remaining individuals. May be especially vulnerable to extirpation because of some factor of its biology.
G2/N2/S2	6-20 or fewer occurrences or with many individuals in fewer locations. May be especially vulnerable to extirpation because of some factor of its biology.
G3/N3/S3	21-100 occurrences, may be rare and local throughout it's range, or in a restricted range (may be abundant in some locations). May be susceptible to extirpation because of large-scale disturbances.
G4/N4/S4	Typically >100 occurrences. Apparently secure.
G5/N5/S5	Typically >100 occurrences. Demonstrably secure.
GX/NX/SX	Believed to be extinct or extirpated, historical records only.
GH/NH/SH	Historically known, may be relocated in future.

E. United States Endangered Species Act (after National Research Council 1995)

Endangered	Any species which is in danger of extinction throughout all or a significant portion of its range.
Threatened	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

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